

ABSTRACT

A plasma etching method for improving an etching profile including providing a substrate including an oxide containing insulating layer in a multilayer semiconductor device; providing a patterned photoresist layer exposing an uppermost layer of the substrate for anisotropically plasma etching a first opening; anisotropically plasma etching through a thickness of at least a portion of the substrate to form the first opening; blanket depositing an etching stop liner to cover at least a portion of the sidewalls of the first opening; patterning according to a photolithographic process for etching a second opening at least partially overlying and encompassing the first opening; and, anisotropically plasma etching through at least another portion of the thickness of the substrate including the first opening to form a second opening at least partially overlying a remaining portion of the first opening.